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THE EFFECTS OF DISABILITY INSURANCE: EVIDENCE FROM SOCIAL SECURITY'S DISABLED-WIDOW PROGRAM

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Abstract

This study measures the effect of disability insurance on labor supply and health insurance coverage. The effect is identified by a policy in 1990 that increased the generosity of Social Security's disabled-widow program. Using data from the Current Population Survey, the results suggest that, in this context, disability benefits led to a one-to-one decline in labor force participation, employment, and private insurance coverage. The results imply that the demand for disability benefits may not reflect a latent demand for public health insurance.

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Key Words: disability insurance, health insurance, labor force participation, Social Security, widows

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I. Introduction

Disability insurance programs in the US have grown tremendously during the last few decades (Autor and Duggan 2006). This growth has raised questions among economists and policy analysts regarding the economic effects of disability insurance programs. One question, and the focus of much research, is whether disability insurance decreases labor supply. This question arises from the simultaneous growth in disability benefit receipt and the decline in labor force participation, particularly among older men in the US during the postwar period (Bound 1989). Another question is whether demand for disability benefits reflects a latent desire for health insurance, as beneficiaries of Social Security disability programs may qualify for Medicaid, Medicare, or both.

To explore these questions and others, this study examines the effects of a legislative reform in 1990 that increased the generosity of Social Security's Spouse's Disability Benefits program. The program provides benefits to disabled widows who may not qualify for disability benefits based on their own work histories, but whose spouse had died while fully insured for Social Security benefits (widows includes widowers, unless otherwise noted). Prior to the reform, the disabled-widow program operated under a stricter disability standard than the disabled-worker program. In particular, the disability determination process for disabled-widow benefits was based on medical factors alone, while the determination for disabled-worker benefits was based on both medical and vocational factors. In 1990, Congress abrogated the stricter standard of the disabled-widow program, which effectively increased the generosity of disability benefits to widows.

The effect of the reform on benefit receipt is immediately apparent in Figure 1. The figure plots the percent of widows receiving disabled-widow benefits, ages 50 to 64, from years

1985 to 1999. Before the reform, benefit receipt was roughly constant at 3.7 percent, but after the reform, benefit receipt increased, reaching 8.6 percent by 1996. For comparison, the figure also plots the percent of the total population, including widows, who receive disabled-worker benefits. Again, the figure is calculated for ages 50 to 64. While the percent of benefit receipt increases gradually from 1985 to 1999, the trend does not change differentially in 1990. Thus, the 5.0 percentage point increase in disabled-widow benefits is likely attributable to the reform.

This study measures the economic effects of the policy using a difference-in-differences estimator. The data come from the March Supplement of the Current Population Survey, spanning several years before and after the reform. The treated group is defined as female widows ages 50 to 59 who do not have a high school diploma. The focus on less educated widows reflects that the consideration of vocational factors in the disability determination process favors the less-educated and the less-skilled. The comparison group is divorced females who are similarly aged and educated.

The results suggest that the reform increased Social Security receipt and Medicare coverage – the latter as an indicator of disability benefits receipt – by 5.2 and 6.3 percentage points, respectively. Additionally, the reform decreased labor force participation and employment by an estimated 5.3 and 4.8 percentage points, respectively. Taken together, the results suggest that, in this context, the expansion of disability insurance led to a one-for-one decline in labor force participation. Moreover, the decline in labor force participation occurred among widows who would have otherwise been employed.

As a placebo test, the model is re-estimated for widowed and divorced females with a high school diploma or more. As expected, the model yields null effects for nearly all outcomes variables of benefit receipt and labor supply.

The model is also estimated for other outcome variables of interest. First, the results show that the policy had no effect of Supplemental Security Income, a separate disability insurance program for the low-income disabled. This result is expected, as the policy only affected the disabled-widow program. Second, the policy decreased private health insurance coverage by 5.5 percentage points, but did not change health insurance coverage overall. This suggests that the increase in benefit receipt is not driven by a latent demand for health insurance coverage. Finally, the policy may have increased rates of poverty and self-reported disability, though the estimates are not precise to draw any firm conclusions.

This study contributes to the growing literature that measures the effect of disability insurance benefits on labor supply. To identify the effect, some studies rely on cross-sectional variation in benefit generosity (Parsons 1980; Slade 1984). These studies suggest that receipt of disability benefits leads to a one-to-one decline in labor force participation. Other studies bound the potential earnings of accepted applicants by the observed earnings of rejected applicants. In one study, by Bound (1989), half of rejected applicants work, suggesting that at most half of accepted applicants could work had they been denied. Subsequent studies include Chen and van der Klaauw (2008); Singleton (2012); and Wachter, Manchester, and Song (forthcoming). These studies derive fairly similar conclusions as Bound (1989), though Wachter et al. find larger potentially larger labor supply effects for young applicants. Recent studies rely on the identities of medical examiners and administrative law judges for identification. Maestas, Mullen, and Strand (forthcoming) conclude that, at the margin, about 28 percent of accepted applicants are capable of work, while French and Song (2011) conclude that 26 percent of accepted applicants are capable of work. Other studies exploit programs to the Canadian and Quebec Pension Plan for identification. Gruber (2000) finds sizeable effects of disability benefits on labor force

participation, but Campolieti (2001, 2004) finds more modest effects. Relative to these studies, the estimates from this study are at the high end; however, an important distinction between this study and others is that it focuses only on widowed females. A unique contribution of this study is that it examines the effect of disability insurance on private health insurance coverage.

II. Background

A. Social Security Disability Insurance Programs

The Social Security Administration operates three disability insurance programs under Title II of the Social Security Act: Disability Insurance for disabled workers; Childhood Disability for adult, disabled children of Social Security beneficiaries; and Spouse's Disability for disabled widows who deceased spouse had been insured for Social Security benefits. Currently, all three programs operate under the same disability standard: a beneficiary must be unable to "engage in any substantial gainful activity by reason of any medically determinable physical or mental impairment which can be expected to result in death or has lasted or can be expected to last for a continuous period of not less than 12 months." An applicant must satisfy all three requirements of the disability standard – the severity requirement, the medically-determinable requirement, and the duration requirement – to be awarded benefits (Bloch 1992).

To apply the disability standard to a particular claim, the Social Security Administration uses a five-step sequential evaluation process. Depending on the step, an applicant can be awarded benefits, denied benefits, or promoted to the next step. The first step asks whether a claimant is currently engaged in a substantial gainful activity. In 2013, substantial gainful activity is defined as earning more than $1,040 per month. If yes, the applicant's claim is denied; if no, the applicant proceeds to step two. The second step asks whether the applicant has

an impairment that limits his or her ability to work. If no, the claim is denied; if yes, the claim proceeds to step three. The third step asks whether the applicant's condition meets or equals the Social Security Administration's Listing of Impairments, which is an enumeration of impairments that are both severe and identifiable. If yes, the claim is accepted; if not, the claim proceeds to step four. The fourth step asks whether the applicant can perform any previous work. If yes, the claim is denied; if no, the claim proceeds to step five. The fifth and final step asks whether the applicant can perform any work in the national economy. If yes, the claim is denied; if no, the claim is accepted.

In the fifth step, the burden of proof lies with the Social Security Administration, not the claimant. This means that, to deny a claim, the Social Security Administration must demonstrate that work exists in the national economy that the applicant can perform. To standardize this determination, the Social Security Administration uses a medical-vocational grid.[1] The grid indicates whether a claim should be denied based on four criteria: age, residual functional capacity, transferrable work skills, and educational attainment. A simplified grid, compiled by Chen and van der Klaauw (2008), is given in Appendix Table 1. In general, the likelihood of an accepted claim should increase with age, decrease with residual functional capacity, decrease with transferrable work skills, and decrease with educational attainment.

A study by Chen and van der Klaauw (2008) show that the use of the grid is evident in the award rates of actual disability claims. The authors note that, because of the grid's categorization of age, the likelihood of an accepted claim should increase discretely at ages 50 and 55. Additionally, this increase should be evident only among claims that reach stage five. (In the authors' data, 40 percent of all claims reach this stage.) To examine if this is the case, the

[1] The grid is used only when the claimant presents an exertional impairment.

authors model the likelihood of an award at stage five as a piece-wise linear function of age, with discontinuities at ages 50 and 55. Using administrative data, the authors show that the likelihood of an award increases by 9.3 percentage points at age 50 and by 28.7 percentage points at age 55.

B. Source of Identification

The objective of this study is to measure the effect of disability insurance on labor supply. To this end, the study exploits a policy change in 1990 to the Spouse's Disability Benefits program, also known as the disabled-widow program. Prior to 1990, the disabled-widow program operated under a stricter disability standard than the other Title II programs. In particular, the Social Security Administration required that a claimant for disabled-widow benefits must have a condition that meets or equals a condition on the Listing of Impairments, determined at the third step of the sequential evaluation process. If a claimant's condition was not on the Listing, the claim was denied. In contrast, under the other disability programs, if a claimant's condition did not meet or equal a condition on the Listing, the claim would proceed to stages four and five, where vocational factors are considered. Several courts challenged the stricter standard for disabled widows, and in 1990, Congress abrogated the stricter standard of the disabled-widow program to equal the standard of the other Title II programs.[2] The relaxing of the disability standard effectively increased the generosity of disability insurance benefits for widows.

The increase in benefit generosity may have affected several important economic outcomes. Of first-order importance is its effect on benefit receipt among widows. This effect is

[2] According to the Social Security Advisory Board's, "Aspects of Disability Decision Making: Data and Materials," important court cases involving widows include Hill (NY), Askin (11th Circuit), Begley (TN), and Bozzi (3rd Circuit).

evident in Figure 1, which shows that receipt of disabled-widow benefits increased by 5 percentage points. Another question is whether the rise in benefit receipt led to a decrease in labor supply, as beneficiaries who earn more than the substantial gainful amount risk losing their benefits. The effects on benefit receipt and labor supply may have also led to changes in other outcomes, such as private insurance coverage, poverty, and self-reported disability status. These effects are estimated in the sections below.

III. Empirical Strategy

The economic effects of disability insurance generosity are measured using a difference-in-differences estimator. According to the estimator, the effect of the reform on a particular outcome variable is measured by the change in the variable among the treatment group relative to the change in the variable among a comparison group, where the changes are measured from before to after the reform. The identifying assumption is that, in the absence of the reform, the change in the outcome variable for both groups would be the same.

For this study, the treatment group is defined as female widows who are ages 50 to 59 and who do not have a high school diploma. The focus on widows, and not widowers, is because all recipients of disabled-widow benefits are female (97.4 percent in 2000). The age range is because eligibility for disabled-widow benefits begins at age 50 and eligibility for the aged-widow program begins at age 60. Finally, the focus on lower educated females reflects that, at step five of the sequential evaluation process, the medical-vocational grid is more generous to less-educated, less-skilled applicants. The comparison group is defined as female divorcees who are ages 50 to 59 and who also lack a high school diploma.

The difference-in-differences estimator is measured using the following regression:

$$Y_i = \beta_0 + \beta_1 P_i T_i + \beta_2 P_i + \beta_3 T_i + \beta_4 X_i + \beta_s + \beta_t + \varepsilon_i.$$

The term Y_i is the outcome variable of interest. The outcome may be continuous, such as the amount of Social Security benefits, or Bernoulli, such as an indicator of Social Security receipt. When the outcome variable is Bernoulli, the regression is a linear probability model. The variable P_i is a period indicator, equaling one after the reform and zero before the reform. The variable T_i is a treatment indicator, equaling one for the treatment group and zero for the comparison group. The vector X_i contains control variables, which includes age, its square, and indicators of race (black and other relative to white). β_s represents state fixed effects, and β_t represents yearly fixed effects, which are identified separately from β_2 if the periods span more than one year. The term ε_i is a robust standard error.

The difference-in-differences estimator is given by the coefficient β_1. The coefficient reflects the change in the outcome variable for the treatment group, after controlling for baseline differences between the treatment and comparison groups, measured by β_3, and trend in the outcome variable shared by both groups, measured by β_2. If the identification assumption holds, then the β_1 measures the causal effect of the reform among the treated group.

B. Data and Sample

The data come from the March Supplement of the Current Population Survey. The survey is conducted annually and, with proper weighting, is representative of the non-institutionalized US population. Initially, the data used for the analysis include years 1983 to 2002, which spans well before and after the policy in 1990. However, for the regression equation above, the pre-reform period is defined as survey years 1986 to 1990, and the post-reform years is defined as 1998 to 2002. Starting the post-reform period in the late 1990s allows time for the policy to affect aggregate measures of the outcome variables.

Panel (A) of **Table 1** presents summary statistics of the treatment and comparison groups during the pre-reform period. The first set of variables on age and race are used as control variables for the regression equation above. As shown, widowed females are older than divorced females, but their racial compositions are almost identical, with widowed females being slightly less likely to be white and slightly more likely to be of another race.

The next two variables are measures of disability benefit receipt, which serve as outcome variables for the regression equation. The first variable is an indicator of Social Security receipt, and the second is the amount of Social Security benefits received (measured in 1990$ using Social Security's average wage index). As shown, widowed females are more likely to receive Social Security benefits - and to receive greater amounts - than divorced females. A limitation of these variables is that they reflect income from all Social Security programs, not just the disabled-widow program, such as disabled-worker benefits or child-in-care benefits for widows.[3] (The figures do not likely reflect aged-widow benefits or old-age benefits, as eligibility for these programs begin at age 60 and 62, respectively.) Nonetheless, the difference-in-differences estimator may still be interpreted as the effect of the reform on disabled-widow benefits, assuming that changes in benefit receipt from the other programs are similar among treatment and comparison groups.

An additional measure of disability benefit receipt, and the next variable in **Table 1**, is Medicare coverage. This is because beneficiaries become automatically eligible for Medicare after two years of disability benefit receipt. The only other way to receive Medicare coverage

[3] A widow may receive both disabled-widow benefits and disabled-worker benefits, but due to program rules, the combined benefit generally does not exceed the full widow benefit (Weaver 2010).

before age 65 is to be diagnosed with end-stage renal disease, and according to the Centers for Medicare and Medicaid Services, these cases represented only 1.3 percent of Medicare enrollees under the age of 65. (At age 65 and beyond, Medicare eligibility is universal.) An advantage of Medicare coverage as a measure of disability benefit receipt is that, unlike Social Security income, it does not likely reflect receipt of child-in-care benefits for widows. A disadvantage is that it systematically underestimates disability benefit receipt among new enrollees, which may bias downward the estimated effect of the policy on the receipt of disabled-widow benefits.[4] As shown, Medicare coverage is similar among widowed and divorced females: 0.091 and 0.080. This contrasts with rates of Social Security receipt, which was higher among widowed females. This difference likely reflects that widows are receiving child-in-care benefits.

The final two variables are measures of labor supply, which also serve as outcome variables. The first variable is labor force participation, which includes both the employed and the unemployed. The second variable is employment, regardless of labor force participation status. The purpose of both variables is to distinguish whether those who change their labor force participation status would have otherwise been employed. As shown, widows are 8.1 percentage points less likely to participate in the labor force and 7.1 percentage points less likely to be employed.

IV. Results

A. Graphical Analysis

[4] In 1999, the ratio of Medicare enrollees to disability insurance beneficiaries under the age of 65 was 0.796, which suggests that 20.4 percent of disability insurance beneficiaries had been on the program for less than two years.

Before proceeding to the regression results, it is useful to illustrate changes in Social Security benefits, Medicare coverage, and labor supply over time. **Figure 2** plots the two measures of Social Security benefits: Social Security receipt and Social Security income. The figures include estimates from 1983 to 2002. While both trends are noisy - which likely reflects both sampling error and measurement error - both trends appear to increase over time. In all years, Social Security benefits are greater among widowed females, but become appreciably higher during some years in the late 1990s.

Figure 3 plots Medicare coverage, the additional measure of disability benefit receipt. Because Medicare coverage lags benefit receipt by two years, the figures are estimated among females ages 52 to 59. (Eligibility for disabled-widow benefits begins at age 50). Again, the trends are noisy, but several notable patterns emerge. First, Medicare coverage is more similar between the two groups than the receipt of Social Security income. Second, both groups exhibit similar upward trends in Medicare coverage just around and before 1990. This provides some assurance that the identification assumption of the difference-in-differences estimator – that both groups would exhibit similar trends in the absence of the reform – is valid. And third, Medicare coverage appears to increase systematically among widows during the post-reform years.

Figure 4 plots the two measures of labor supply: labor force participation and employment. In all years, labor supply is lower among widowed females. More importantly, both groups show similar trends in labor supply up until the early 1990s, which again supports the identification assumption of the difference-in-differences estimator. Thereafter, the labor supply of widowed females declines relative to divorced widows, suggesting that the policy may have decreased labor force participation and employment.

B. Regression Results

The regression results from the difference-in-differences model are reported in **Table 2**. Again, the pre-reform period is defined as 1986 to 1990, and the post-reform period is defined as 1998 to 2002. The coefficient of interest is on the interaction between the post-reform indicator and the treatment group indicator, labeled as "Post*Treat" in the table.

Columns (1) and (2) show the estimated effect of the policy on Social Security benefits. As shown, the reform increased receipt of any Social Security income by an estimated 5.2 percentage points and increased Social Security income by $301 (in 1990$). Both estimates are statistically significant at the five percent level. The increase in benefit receipt is similar to the 5 percentage point increase in disabled-widow benefits in **Figure 1**.

Column (3) shows the estimated effect of the policy on Medicare coverage. The sample size declines from columns (1) and (2) because the model is estimated among females ages 52 to 59. As shown, the reform increased coverage by an estimated 6.3 percentage points, which is statistically significant at the one percent level. When the sample is expanded to include ages 50 to 59, the point estimate declines to 0.060 (standard error: 0.020), but remains statistically significant. These estimates for Medicare coverage are not statistically different from the estimate for Social Security receipt reported in column (1).

Finally, columns (4) and (5) show the estimated effect of the policy on labor force participation. As shown, the policy decreased labor force participation by 5.3 percentage points and employment by 4.8 percentage points. These estimates are similar in magnitude to the percentage point changes in Social Security receipt and Medicare coverage. Taken together, the results suggest that, in this context, the expansion of benefit receipt led to a one-for-one reduction in labor force participation. It also suggests that the decline in labor force participation was driven by those who would have otherwise been employed.

A concern with the labor supply estimates in columns (4) and (5) is that the coefficient for labor force participation is statistically significant only at the 10 percent level and that the coefficient for employment is statistically insignificant. One way to increase statistical precision, without drastically changing the estimates themselves, is to increase the number of years in the periods. For example, when the post-reform period covers years 1996 to 2002, the difference-in-differences estimate for labor force participation and employment are -0.0544 (standard error: 0.027) and -0.048 (standard error: 0.027), respectively. However, the coefficients on Social Security receipt and income change to -0.025 (standard error: 0.021) and -$145 (standard error: 145), respectively. Mentioned above, the sensitivity of the estimates for Social Security benefits may reflect both sampling error and measurement error. Nonetheless, the difference-in-differences estimate for Medicare remains robust and statistically significant: -0.048 (standard error: 0.020).

B. High School Diploma or More

In the previous analysis, the sample is restricted to females with less than a high school diploma. This is because, at step five of the sequential evaluation process, the medical-vocational grid is more generous to less-educated, less-skilled applicants. Thus, as a placebo test, the difference-in-differences model is re-estimated using females with a high school diploma or more. The logic of the placebo test is that, if the results in **Table 2** are driven by the reform, then there should be little to no change in benefit receipt, Medicare coverage, or labor force participation among the more educated.

Summary statistics of more educated females are presented in panel (B) of **Table 1**, and the estimates from the difference-in-difference model are presented in **Table 3**. As shown, none of the difference-in-differences estimates among more educated females are economically or

statistically significant. These null effects provide further support that the difference-in-differences estimates in **Table 2** reflect the causal effects of the policy.

C. Additional Outcome Variables

Taken together, the results suggest that the policy increased benefit receipt and decreased labor supply, particularly among widows with less than a high school diploma. The changes in benefit receipt and labor supply, in turn, may have affected other outcomes, such as private insurance coverage, poverty, and self-reported disability status.

Table 4 shows summary statistics of additional outcomes variables. As before, the treatment group is widowed females ages 50 to 59 who do not have a high school diploma, and the comparison group is divorced females ages 50 to 59 who do not have a high school diploma. The first two variables reflect receipt of Supplement Security Income (SSI), a separate disability insurance program targeted to the low-income disabled. The disability standard for SSI is similar to the disabled-worker program and, more importantly, did not change differentially for the treatment and comparison groups during the period of analysis. As such, there should be no direct effect of the policy on SSI receipt, though the increase in disabled-widow benefits may have crowded out SSI benefits, since the latter are income-tested. As shown in **Table 4**, widowed females are less likely to receive SSI benefits than divorced females.

The next two variables are related to health insurance coverage: private health insurance coverage and any health insurance coverage. The policy may have decreased private health insurance coverage in two ways. First, the policy may have decreased private health insurance through one's employer by decreasing in employment. And second, the policy may have crowded out private forms of health insurance by expanding Medicare coverage. The net effect of the policy on health insurance coverage is measured by the second variable, an indicator of

any health insurance. As shown in the table, both measures of health insurance are similar among widowed and divorced females.

The next variable is indicator of poverty status, which is defined as being at or below 150 percent of the poverty line measured at the family level. The change in poverty is intended to measure the net effect of the policy on family income and, to some extent, economic well-being. The final variable is self-reported disability status. This variable is intended to measure whether self-reported disability is endogenous to the generosity of disability insurance.[5] As shown in the table, rates of poverty and self-reported disability are also similar between the two groups.

The estimates from the difference-in-differences model are presented in **Table 5**. Columns (1) and (2) report the estimates for SSI receipt and income, respectively. As expected, the reform had little to no effect on SSI benefits. The null effects also suggest that there were no differential declines in the health of widows, which further supporting the claim that the estimates in **Table 2** represent causal effects of the reform.

The estimates for health insurance coverage are presented in columns (3) and (4). As shown, private health insurance coverage declined by 5.5 percentage points, but there was relatively no change in any health insurance coverage. Interestingly, the point estimate for private health insurance is similar in absolute value to the point estimate for Medicare coverage in **Table 2**. These results have two implications. First, in this context, the expansion of Medicare coverage led to a one-for-one decline in private health insurance. On net, overall health coverage did not change. And second, the demand for disability benefits is not likely driven by a

[5] This issue is explored by Benitez-Silva, Buchinsky, Chan, Cheidvasser, and Rust (2004); Bound (1991), and Singleton (2009), to name a few.

latent demand for health insurance coverage, since the rise in benefit receipt appears to have occurred among those who were previously covered by private health insurance.

Columns (5) and (6) report the estimates for poverty and self-reported disability. As shown, the difference-in-differences estimate is positive for both outcomes, but neither estimate is statistically significant. The regression results for poverty do not change appreciably when poverty is defined as below the poverty line or below 125 percent of the poverty line. Thus, the effects of disability insurance generosity on poverty and self-reported disability remain inconclusive.

V. Conclusion

This study measures the economic effects of disability insurance. The effects are identified by a policy reform in 1990 to Social Security's disabled widow program. According to the results, the expansion of the disability insurance program led to substantial declines in labor force participation, employment, and private health insurance coverage.

The results make two substantive contributions to the literature. First, the effects on labor supply fall at the high end of results in related studies. This may reflect the unique population of interest: widowed females ages 50 to 59 who lack a high school diploma. This group likely represents a substantial proportion of disability claims, as the policy reform increased benefit generosity by considering vocational factors in the disability determination process. And second, the effects on private health insurance suggest that the demand for disability benefits does not reflect a latent demand for public health insurance coverage. In fact, the results suggest a one-to-one crowd out of benefit receipt and Medicare coverage on private health insurance coverage. On net, health insurance coverage did not change.

Appendix Table 1
Medical Vocational Grid

		Illiterate		1st to 6th Grade		7th to 11th Grade		High School or More	
Residual Capacity	Age	Unskilled	Skilled	Unskilled	Skilled	Unskilled	Skilled	Unskilled	Skilled
Sedentary	60-64	D	D	D	D	D	D	D	D
	55-59	D	D	D	D	D	D	D	D
	50-54	D	D	D	D	D	D	D	D
	45-49	D	N	N	N	N	N	N	N
	18-45	N	N	N	N	N	N	N	N
Light	60-64	D	D	D	D	D	D	D	D
	55-59	D	D	D	D	D	D	D	D
	50-54	D	D	N	N	N	N	N	N
	45-49	N	N	N	N	N	N	N	N
	18-45	N	N	N	N	N	N	N	N
Medium	60-64	D	N	D	N	D	N	N	N
	55-59	D	N	N(D)	N	N(D)	N	N	N
	50-54	N	N	N	N	N	N	N	N
	45-49	N	N	N	N	N	N	N	N
	18-45	N	N	N	N	N	N	N	N

Note: "D" indicates disabled, and "N" indicates not disabled.
Source: Chen and van der Klaauw (2008)

References

Autor, David, and Mark Duggan. 2006. "The Growth in the Social Security Disability Rolls: a Fiscal Crisis Unfolding." *Journal of Economic Perspectives* 20(3): 71-96.

Benitez-Silva, Hugo, Moshe Buchinsky, Hiu Man Chan, Sofia Cheidvasser, and John Ruse. 2004. "How Large is the Bias in Self-Reported Disability?" *Journal of Applied Econometrics* 19: 649-670.

Bloch, Frank. 1992. *Disability Determination*. Westport, CT: Greenwood Press.

Bound, John. 1989. "The Health and Earnings of Rejected Disability Insurance Applicants." *American Economics Review* 79(3): 482-503.

Bound, John. 1991. "Self-Reported versus Objective Measures of Health." *Journal of Human Resources* 26(1): 106-138.

Campolieti, Michele. 2001. "The Canada/Quebec Pension Plan Disability Program and the Labor Force Participation of Older Men." *Economics Letters* 70: 421-26.

Campolieti, Michele. 2004. "Disability Insurance Benefits and Labor Supply: Some Additional Evidence." *Journal of Labor Economics* 22(4): 863-889.

Chen, Susan and Wilbert van der Klaauw. 2008. "The Work Disincentive Effects of the Disability Insurance Program in the 1990s." Journal of Econometrics 142(2): 757-84.

French, Eric and Jae Song. 2011. "The Effect of Disability Insurance Receipt on Labor Supply." *Federal Reserve Bank of Chicago* WP-2009-05.

Gruber, Jonathan. 2000. "Disability Insurance Benefits and Labor Supply." *Journal of Political Economy* 108(6): 1162-83.

Maestas, Nicole, Kathleen Mullen, and Alexander Strand. 2011. "Does Disability Insurance Receipt Discourage Work? Using Examiner Assignment to Estimate Causal Effects of SSDI Receipt." University of Michigan Retirement Research Center. Working Paper 2010-241.

Parsons, Donald. 1980. "The Decline in Male Labor Force Participation." *Journal of Political Economy* 88(February): 117-34.

Social Security Administration. 2012. *Aspects of Disability Decision Making: Data and Materials.* Washington D.C.: Social Security Administration.

Social Security Administration. Various years. *Annual Statistical Report on the Social Security Disability Insurance Program.* Washington, D.C.: Social Security Administration.

Social Security Administration. Various years. *Annual Statistical Supplement*. Washington, D.C.: Social Security Administration.

Singleton, Perry. 2009. "The Effect of Disability Insurance on Health Investment: Evidence from the Veterans Benefits Administration's Disability Compensation Program." *Journal of Human Resources* 44(4): 998-1022.

Singleton, Perry. 2012. "Earnings of Rejected Applicants to the Social Security Disability Insurance Program." *Economics Letters* 116(2): 147-50.

Slade, Frederic. 1984. "Older Men: Disability Insurance and the Incentive to Work." *Industrial Relations* 23(Spring): 260-69.

Wachter, Till von, Jae Song, and Joyce Manchester. 2011. "Trends in Employment and Earnings of Allowed and Rejected Applicants to the Social Security Disability Insurance Program." *American Economic Review*.

Weaver, David. 2010. "Widows and Social Security." *Social Security Bulletin* 70(3): 89-109.

Table 1

Summary Statistics: Females Ages 50 to 59

	(A) Less than High School Diploma		(B) High School Diploma or More	
	Widowed	Divorced	Widowed	Divorced
Age (years)	55.6	54.4	55.3	54.1
	(0.077)	(0.075)	(0.058)	(0.048)
White	0.686	0.695	0.846	0.813
	(0.013)	(0.012)	(0.008)	(0.007)
Black	0.268	0.269	0.124	0.158
	(0.012)	(0.012)	(0.007)	(0.006)
Other Race	0.046	0.036	0.031	0.029
	(0.006)	(0.005)	(0.004)	(0.003)
College degree			0.350	0.456
			(0.010)	(0.008)
Social Security Receipt	0.190	0.102	0.112	0.043
	(0.011)	(0.008)	(0.007)	(0.003)
Social Security Income	912	438	560	197
(1990$)	(61.9)	(39.9)	(38.2)	(17.4)
Medicare	0.091	0.080	0.049	0.029
	(0.008)	(0.007)	(0.005)	(0.003)
Labor Force Participation	0.439	0.520	0.686	0.827
	(0.014)	(0.013)	(0.010)	(0.006)
Employment	0.411	0.482	0.663	0.795
	(0.013)	(0.013)	(0.010)	(0.007)
Observations	1334	1476	2287	3517

Note: The figures are estimated using the March Supplement of the Current Population Survey, survey years 1986 to 1990. All figures are in percent unless otherwise noted. Standard errors are in parentheses.

Table 2

Linear Probability Models: Females Ages 50 to 59 with Less than a High School Diploma

	(1) Social Security Receipt	(2) Social Security Income	(3) Medicare	(4) Labor force participation	(5) Employment
Post*Treat	0.052	301	0.063	-0.053	-0.048
	(0.024)**	(128)**	(0.023)***	(0.030)*	(0.030)
Post	0.023	138	0.025	-0.032	-0.051
	(0.027)	(133)	(0.028)	(0.036)	(0.036)
Treat	0.072	41	-0.018	-0.058	-0.051
	(0.014)***	(79.0)***	-0.012	(0.019)***	(0.019)***
Age	-0.104	-809	-0.278	0.142	0.066
	(0.078)	(420)*	(0.122)**	(0.108)	(0.107)
Age^2	0.001	7.64	0.003	-0.001	-0.001
	(0.001)	(3.86)**	(0.001)**	(0.001)	(0.001)
Black	0.025	34.8	0.03	-0.019	-0.034
	(0.014)*	(67.9)	(0.014)**	(0.018)	(0.018)*
Other	-0.038	-272	0.013	-0.125	-0.121
	(0.024)	(112)**	-0.025	(0.034)***	(0.034)***
Observations	4798	4798	4002	4798	4798

Note: The figures are estimated using the March Supplement of the Current Population Survey. The pre-reform period covers survey years 1986 to 1990, and the post-reform period covers survey years 1998 to 2002. The treatment group is defined as widowed females, and the comparison group is defined as divorced females. In specification (3), the sample is restricted to ages 52 to 59. Robust standard errors are in parentheses. *, **, and *** indicate statistical significance at the 10, 5, and 1 percent levels, respectively.

Table 3

Linear Probability Models: Females Ages 50 to 59 with a High School Diploma or More

	(1) Social Security Receipt	(2) Social Security Income	(3) Medicare	(4) Labor Force Participation	(5) Employment
Post*Treat	0.008	71.9	0.007	0.005	0.00
	(0.011)	(69.0)	(0.010)	(0.016)	(0.017)
Post	0.022	264	0.026	-0.045	-0.038
	(0.010)**	(72.3)***	(0.011)**	(0.016)***	(0.017)**
Treat	0.065	338	0.018	-0.122	-0.116
	(0.008)***	(42.8)***	(0.006)***	(0.012)***	(0.012)***
Age	-0.017	-147	0.01	0.024	0.066
	(0.033)	(211)	(0.053)	(0.050)	(0.052)
Age^2	0.00	1.44	0.00	0.00	-0.001
	(0.00)	(1.93)	(0.00)	(0.00)	(0.00)
Black	0.026	92.6	0.037	-0.077	-0.08
	(0.007)***	(412)**	(0.008)***	(0.011)***	(0.011)***
Other	-0.006	-18.116	0.005	-0.031	-0.031
	(0.012)	(104)	(0.013)	(0.021)	(0.022)
Observations	14678	14678	11399	14678	14678

Note: The figures are estimated using the March Supplement of the Current Population Survey. The pre-reform period covers survey years 1986 to 1990, and the post-reform period covers survey years 1998 to 2002. The treatment group is defined as widowed females, and the comparison group is defined as divorced females. In specification (3), the sample is restricted to ages 52 to 59. Robust standard errors are in parentheses. *, **, and *** indicate statistical significance at the 10, 5, and 1 percent levels, respectively.

Table 4

Summary Statistics: Females Ages 50 to 59 with Less than a High School Diploma

	Less than High School Diploma	
	Widowed	Divorced
Supplemental Security Income	0.113	0.162
Receipt	(0.009)	(0.010)
Supplement Security Income	345	569
(1990$)	(31.7)	(39.7)
Private Health Insurance	0.397	0.376
	(0.018)	(0.017)
Any Health Insurance	0.682	0.696
	(0.017)	(0.016)
Poverty	0.559	0.586
	(0.018)	(0.017)
Self-Reported Disability	0.318	0.334
	(0.017)	(0.016)
Observations	1334	1476

Note: The figures are estimated using the March Supplement of the Current Population Survey, survey years 1986 to 1990. For the last four variables, the number of observations is 773 and 848 for widowed and divorced females, respectively. All figures are in percent unless otherwise noted. Standard errors are in parentheses.

Table 5

Linear Probability Models: Females Ages 50 to 59 with Less than a High School Diploma

	(1)	(2)	(3)	(4)	(5)	(6)
	Supplemental Security Income Receipt	Supplemental Security Income	Private Health Insurance	Any Health Insurance	Poverty	Self-Reported Disability
Post*Treat	0.016	-60.3	-0.055	-0.013	0.039	0.046
	(0.022)	(82.1)	(0.033)*	(0.032)	(0.034)	(0.033)
Post	0.039	200	-0.072	-0.032	0.052	0.064
	(0.028)	(102)**	(0.035)**	(0.034)	(0.036)	(0.035)*
Treat	-0.059	-229	0.013	-0.035	-0.043	-0.038
	(0.013)***	(52.0)***	(0.024)	(0.023)	(0.025)*	(0.024)
Age	-0.049	-132	-0.066	-0.041	-0.268	0.092
	(0.079)	(312)	(0.120)	(0.116)	(0.123)**	(0.119)
Age^2	0.001	1.43	0.001	0	0.002	-0.001
	(0.001)	(2.86)	(0.001)	(0.001)	(0.001)**	(0.001)
Black	0.059	216	-0.075	0.01	0.084	0.018
	(0.015)***	(59.3)***	(0.021)***	(0.020)	(0.021)***	(0.021)
Other	0.048	219	-0.115	0.03	-0.027	0.018
	(0.027)*	(106)**	(0.035)***	(0.036)	(0.039)	(0.037)
Observations	4798	4798	3609	3609	3609	3609

Note: The figures are estimated using the March Supplement of the Current Population Survey. The pre-reform period covers survey years 1986 to 1990, and the post-reform period covers survey years 1998 to 2002. The treatment group is defined as widowed females, and the comparison group is defined as divorced females. In specifications (3), (4), (5), and (6), the sample size declines because the outcome variable is not available before 1988. Robust standard errors are in parentheses. *, **, and *** indicate statistical significance at the 10, 5, and 1 percent levels, respectively.

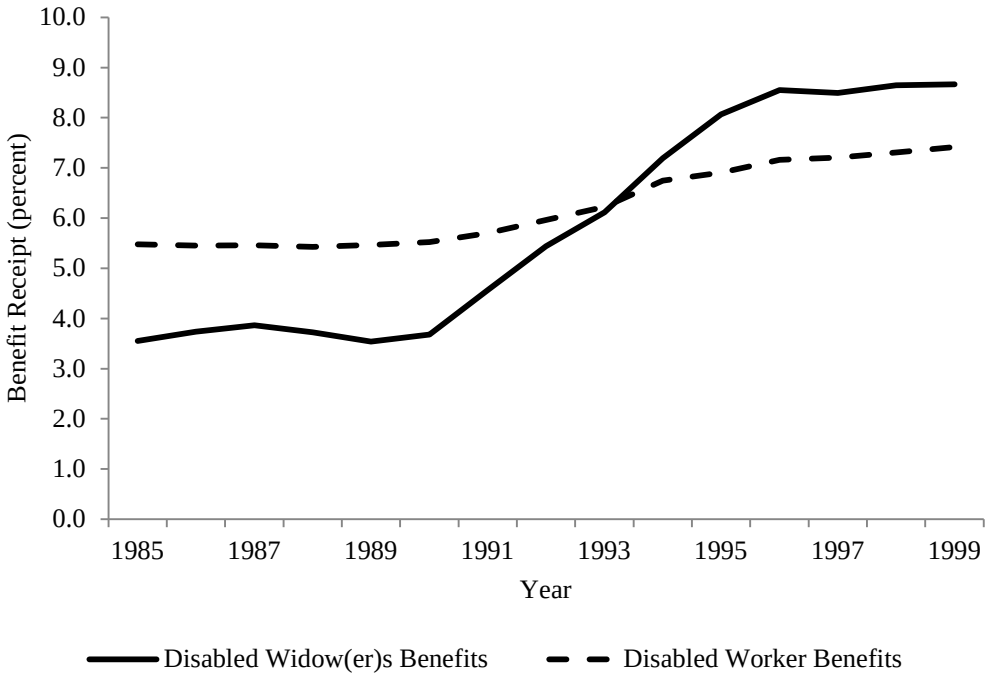
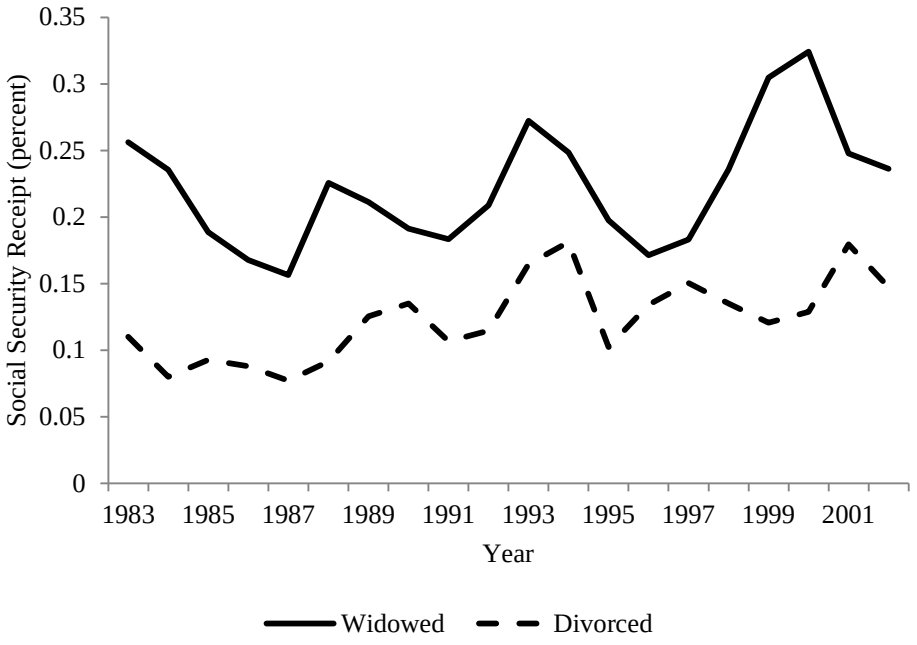
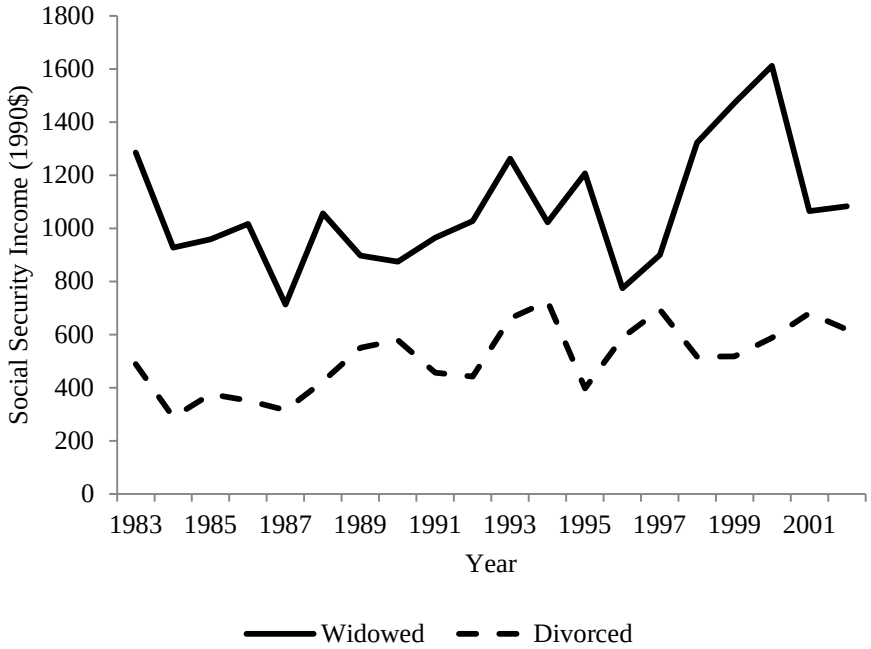


Figure 1: Receipt of Disabled Widow(er) and Disabled Worker Benefits: Ages 50 to 64
Note: Benefit receipt is calculated as the number of beneficiaries in current payment status divided by the size of the population. The number of disabled widow(er) benefits is calculated from the Social Security Administration's Annual Statistical Report on the Social Security Disability Insurance Program (SSA). The number of disabled worker benefits is calculated from the Social Security Administration's Annual Statistical Supplement (SSA). The size of the population is estimated from the March Supplement of the Current Population Survey.



A. Social Security Receipt



B. Social Security Income

Figure 2: Social Security: Females Ages 50 to 59
Data: Current Population Survey
Note: The pre-reform period corresponds with survey years 1986 to 1990, and the post-reform period corresponds with survey years 1998 to 2002.

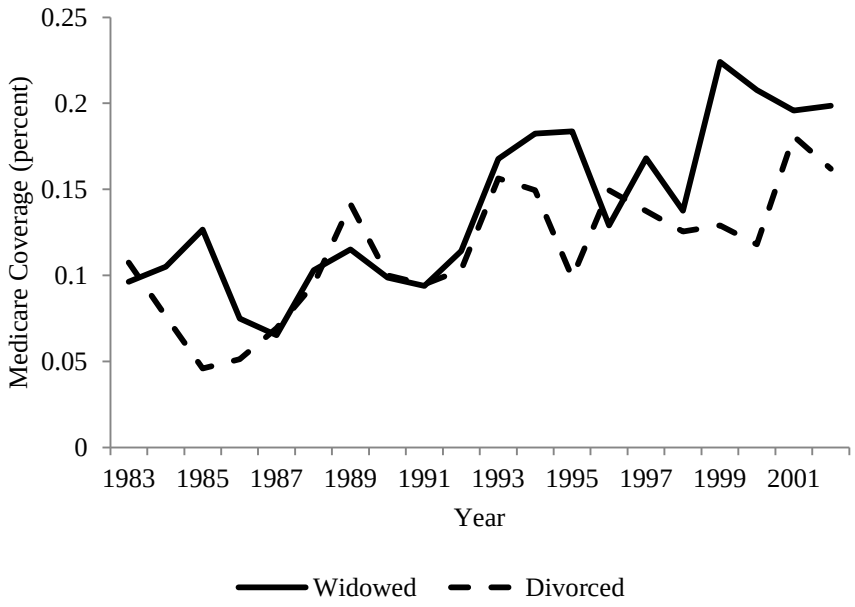
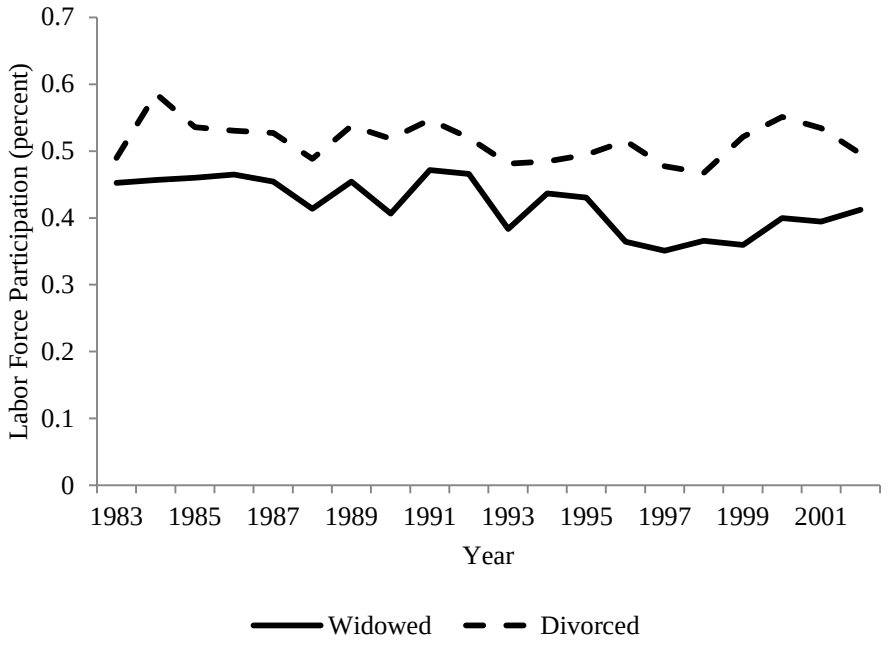
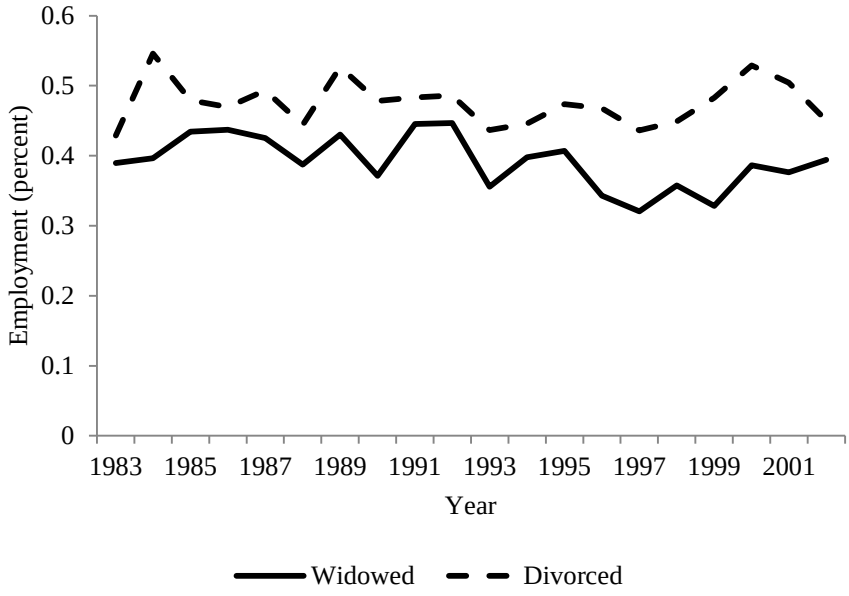


Figure 3: Medicare: Females Ages 52 to 59
Data: Current Population Survey
Note: The pre-reform period corresponds with survey years 1986 to 1990, and the post-reform period corresponds with survey years 1998 to 2002.



A. Labor Force Participation



B. Employment

Figure 4: Labor Supply: Females Ages 50 to 59
Data: Current Population Survey
Note: The pre-reform period corresponds with survey years 1986 to 1990, and the post-reform period corresponds with survey years 1998 to 2002.